

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

**Exemption No. 5288B**

In the matter of the petition of

**Air Transport Association of  
America**

**Regulatory Docket No. 26400**

for an exemption from §§ 121.314  
and 135.169(d) of the Federal  
Aviation Regulations

**AMENDMENT TO PARTIAL GRANT OF EXEMPTION**

By letters dated November 20, 1990, and February 7, 1991, Mr. Joseph D. Vreeman, Vice President, Engineering and Maintenance, Air Transport Association of America (ATA), petitioned for exemption from §§ 121.314 and 135.169(d) of the Federal Aviation Regulations (FAR) to permit up to a 36-month extension in the compliance time for the retrofit of Class C and D cargo compartment liners. The petition was on behalf of all affected operators. In response to this petition, Exemption No. 5288 was granted on March 18, 1991. That exemption permits the operation of airplanes that do not comply with §§ 121.314 and 135.169(d) after March 20, 1991, under a specified schedule, depending on the model. In addition, the exemption grants fleet wide relief for repairs. This relief is divided into two parts: (1) new repairs must comply with the regulations after September 20, 1991, and (2) all repairs must be in compliance after March 20, 1992. The exemption was subsequently amended by Exemption No. 5288A to allow relief for two operators from the "new repair" portion of the requirement by extending the compliance time by 30 days.

By letter dated February 7, 1992, ATA petitioned the FAA to amend Exemption No. 5288. The petition requested that additional time be granted until October 20, 1992, to permit replacement of existing repairs with repairs that comply with the regulations, and to allow repair methods for detail parts to be developed and incorporated into the fleet.

**ANM-92-020-E**

**Section of the FAR affected:**

Section 121.314, as amended by Amendment 121-202, and § 135.169(d) as amended by Amendment 135-31, require, in part, that after March 20, 1991, all Class C and D cargo compartments greater than 200 cubic feet in volume, used on airplanes in air carrier, air taxi and commercial service, have liners constructed of fiberglass or material satisfying the test requirements of § 25.855, as amended by Amendment 25-60, or, in the case of liners approved prior to March 20, 1989, aluminum.

**Related Section of the FAR:**

Section 25.855(a-1)(1), as amended by Amendment 25-60, incorporates a new flame penetration test using an oil burner. This test is required of liner materials in Class C and D cargo compartments on affected airplanes, regardless of whether or not the material is fiberglass. These test standards are contained in Appendix F, Part III of Part 25.

**The petitioner's supportive information is as follows:**

In their original petition, ATA summarized the scope of the difficulties with repairs. It was noted at that time that, while vendors were optimistic at their ability to produce repairs that were both technically qualified and quantitatively sufficient, work still needed to be done to assure timely incorporation into the fleet of new repair systems.

"ATA formed a Cargo Liner Working Group in October 1990 in response to growing industry concerns that suitable design solutions had not been developed in time to support the original compliance deadlines contained in FAR 121.314. The Working Group, which consisted of representatives from operators, manufacturers and repair patch vendors, developed a wide-ranging series of actions which have led to the approval of several repair patches for cargo liners and a workable design and delivery schedule for "design feature" components which must be replaced to comply with the rule.

"Since that time, the Working Group has continued to meet on occasion to review progress and coordinate industry efforts to facilitate compliance. As a result of this cooperation, Boeing was able to accelerate the production schedule for its entire range of replacement parts for the rule. Manufacturers of repair patches developed high-temperature adhesive repair procedures which do not involve "blind" fasteners and achieved an order-of-magnitude reduction in cost of such repairs. Industry surveys allowed Original Equipment Manufacturers to refine their demand projections for spare parts, and to coordinate the release of spares with actual installation schedules. Adhesive repairs have been installed on a systematic basis since they were first available in the summer of 1991.

"Refurbishment of cargo bays to comply with FAR 121.314 is a massive undertaking. Operators have experienced temporary material shortages as

they sought to deploy an entirely new repair system to thousands of line and repair stations around the world. Aircraft maintenance schedulers began the task of systematically replacing parts and upgrading repairs on more than 4,000 aircraft in operation by ATA member airlines, plus the regional and international operators who are also complying with the rule. By December 1991, this effort was in full swing. Operators were particularly concerned with the next major milestone in the rule, to complete the replacement of existing repairs by March 20, 1992.

"PROBLEMS WITH IMPLEMENTATION: Early production and delivery problems for high temperature adhesive repairs were resolved by the fall of 1991. Vendors now quote delivery within a few weeks after receipt of orders. The flow of materials has reached a mature level of distribution for the great bulk of the world's airlines.

"Airlines on the other hand, have discovered two fundamental problems with their compliance schedules. As a result, no operator will be able to fully comply with the March 20, 1992, compliance deadline for high temperature repairs.

"The first problem relates to the sheer magnitude of the task at hand. Operators significantly under-estimated the scope of the workload required for compliance. Maintenance personnel discovered that existing repairs were far more prevalent than originally anticipated. For certain operators, aircraft which had been scheduled for repair compliance on an overnight check were repeatedly routed to major repair stations for replacement of entire cargo liner segments. The pace of compliance was further slowed as initial stocks of repair materials and raw liner stock were depleted by the unanticipated demand. Operators with mixed fleets of various kinds of aircraft found their compliance tracking mechanisms were overwhelmed by the delays and the burden of a near-record year for the issuance of Airworthiness Directives. By January 1992, the USAir, Northwest, Continental, TWA, United and Federal Express fleets were only partially complied with, insofar as repair is concerned; there is no way to accomplish the repair requirement in the next 60 days, even with widespread removal of aircraft from scheduled service.

"All ATA member airlines are making a good-faith effort to comply with the rule. Aircraft are being steadily scheduled for compliance, and the airlines are ordering additional materials to cope with the steeply increasing material consumption rates that they have encountered. At the January 28, 1992, meeting of the Cargo Liner Working Group, repair vendors reported that the airlines have yet to reduce the rate of their orders for additional repair materials.

"The second problem relates to repairs on so-called "design features," the ancillary components which make up a cargo bay. These components range from light adapter rings to air conditioning ducts to fabric access panels located throughout the bay. Although these components represent a relatively small portion of the total wetted area of the bay, they have presented the most vexing problem for repairs.

"In short, there are no approved repairs in existence for "design features." Many of these components are constructed from hand lay-up fiberglass, have compound curvatures, or from flexible fabric panels. The rigid repair patches which were developed for the cargo liners simply don't work on "design features." Vendors have been working to adapt their repair techniques to such applications. In at least one instance, a repair process is pending FAA approval.

"At the same time, Boeing has been investigating the repairs issue, including the conduct of additional research into repair techniques which were initially discarded as being impractical. Boeing Materials Technology has agreed to revise its omnibus Service Letter ...to incorporate the results of vendor development efforts and Boeing's own research into repair techniques. This letter should be re-issued in the April 1992 time frame. The intervening time frame from February to April should be sufficient, with expedited processing, to gain approval for these new repairs.

"RATIONALE FOR THE REQUIRED EXTENSION: A minimum of six months after approval of the repairs is essential to establish a viable repair capability for "design features." Vendors will need a minimum of 60 days to fill initial orders, presuming there are no delays in the approval process itself. Operators will need a minimum of 30 days (borne out by the difficulties encountered in the initial high temperature patch distribution) to deploy the new repair kits to their points of intended use. Operators will then have 90 days to inspect and repair "design features." Initial assessments indicate this six month compliance window is based on optimistic but achievable projections.

"THE PUBLIC INTEREST: Repair procedures do not exist to support the existing compliance deadline of March 20, 1992, for repairs. Even if the procedures existed, operators would be unable to install them in time, even with large-scale removal of aircraft from service. FAR 121.314 was never contemplated to require massive disruptions of the nation's air transport system. Therefore, it is both impractical and unnecessary to remove aircraft from service to accomplish these repairs.

"The original intent of FAR 121.314 was to enhance the safety of air service by improving the resistance of cargo bays to fire. This intent has been largely met through the replacement of materials in cargo liners themselves. The benefit in flame resistance to be gained from the replacement of a specific repair is minuscule. There is no significant risk to the traveling public from an extension in the compliance deadline for repairs to October 20, 1992. Until adequate repairs are approved and fielded for "design features," there is no practical way to comply with the rule in any case. It is in the public interest to develop such repairs.

"The extension should also allow the development and approval of more economical repair techniques, reducing the cost of an increasingly expensive rule. Such cost reductions are of benefit to the traveling

public.

"Finally, the extension should avoid the need for the removal of aircraft from scheduled service, with its attendant impact on travel schedules and the accompanying loss of revenue traffic."

The FAA finds, for good cause, that action on this petition should not be delayed by publication and comment procedures for the following reasons: (1) a grant of exemption would not set a precedent in that this matter involves circumstances of this industry's efforts to achieve compliance prior to the deadline established by the regulation, (2) delay in acting on the petition would be detrimental to the operators represented by the petitioner in that it could result in removal from service of aircraft, and (3) the reasons for this petition are identical to those for which Exemption No. 5288 was issued.

**The Federal Aviation Administration's analysis/summary is as follows:**

As noted by the petitioner, repairs which comply with the requirements of § 121.314 have only recently been developed.

The primary compliance problem with the existing repairs is the performance of the repair when subjected directly to the burner flame. The primary function of the repair is to provide an air barrier and inhibit any increased ventilation through the compartment due to the damage. The repair methods currently used would therefore be satisfactory if the flame does not impinge directly on the repair. Over the long term, it must be assumed that a fire could impinge directly on the repair. The repair should, therefore, provide the same level of protection as the basic liner panel. In issuing Exemption No. 5288, the FAA considered that a reasonable amount of time was warranted to implement recently developed repair methods into the fleet. The terms of Exemption No. 5288 permitted a one year extension in the compliance date of Amendments 121-202 and 135-31 to upgrade all repairs in cargo compartments, regardless of when they were initially made. In order to facilitate the introduction of new repairs into the fleet, only a six month extension was granted, after which any new repair had to comply with the regulation. The incorporation of new repairs has been accomplished, so the relief requested by the petitioner only applies to already existing repairs. In granting an initial one year extension for replacement of all existing repairs the FAA considered many factors, including the repair kit suppliers' stated ability to provide the necessary number of kits to the operators. Another major factor was the operators' estimates of their capabilities in replacing existing repairs, fleet wide. In reviewing the petitioners supporting information the FAA notes that there was apparently a gross underestimation on the part of the operators, the kit suppliers and the FAA as to how pervasive repairs are in existing cargo compartments. Since the repair of a cargo liner is a line modification, as opposed to a base modification, the extent to which a liner has been repaired is not obvious from records. In many cases, a decision as to whether a panel should be repaired or simply replaced on economic grounds must be made and the necessary parts may not be available. Thus a scheduled

maintenance action can be significantly delayed to avoid an unnecessary repair action. This is one example of the factors that were not evident at the time Exemption No. 5288 was issued.

The second issue noted by the petitioner is the need for special repair methods for "design features." Design features (referred to as "details") are defined in Exemption No. 5288 as lighting lenses, fasteners, airducts, etc. that are not primarily cargo liners, but whose failure would compromise the ability of the compartment liner to perform its intended function. As noted in Exemption No. 5288 and earlier in this exemption, repairs were not explicitly addressed in the promulgation of the regulations. The compound problem of repairs to detail design features was also not explicitly addressed in the regulations, and evidently not resolved by the repair suppliers when the new repair methods were developed. The lack of approved repair schemes for detail parts leaves only the expensive alternative of replacing every damaged detail part. Due to the economic burden of having to replace each such feature when damaged, the FAA feels that additional time to develop and implement a suitable repair is warranted.

The petitioner has asked for a seven month extension from the terms of Exemption No. 5288 for both existing repairs as well as repairs to design features. The FAA concurs that a seven month extension for repairs to design features is warranted. Since there is no approved method at this time, seven months extension is reasonable to allow for the necessary approval, distribution and implementation processes that must occur for a new repair method. For the replacement of existing repairs to the basic liner material, the FAA considers that a seven month extension should be more than adequate to accomplish a retrofit of existing repairs. Based on the amount of work that has been done to date and the capability of vendors to supply kits, it does not appear that the entire seven-month extension would be needed. Nevertheless, having separate compliance dates for existing repairs and repairs to design features would incur an additional economic burden due to recordkeeping and compliance scheduling. The FAA, therefore, considers that a common compliance time is in the public interest.

In consideration of the foregoing, I find that an amendment to Exemption No. 5288 is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the petition of the Air Transport Association of America to amend Exemption No. 5288 is hereby granted with the following provisions:

1. Repairs of the cargo liners of transport category airplanes must comply with §§ 121.314 as adopted by Amendment 121-202 and 135.169(d) as adopted by Amendment 135-31, after October 20, 1992.
2. Repairs to cargo compartment liner details of transport category airplanes, made after October 20, 1992 must comply with §§ 121.314 as adopted by Amendment 121.202 or 135.169(d) as

adopted by Amendment 135-31.

All other provisions of Exemption No. 5288, together with its conditions and limitations, remain the same and are applicable to this exemption. This amendment is part of, and shall be attached to, Exemption No. 5288.

Issued in Renton Washington, on

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Darrell M. Pederson  
Acting Manager,  
Transport Airplane Directorate  
Aircraft Certification Service, ANM-100



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